Why Isn't Creativity More Important to Educational Psychologists? Potentials, Pitfalls, and Future Directions in Creativity Research

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The construct of creativity has a great deal to offer educational psychology. Creativity appears to be an important component of problem-solving and other cognitive abilities, healthy social and emotional well-being, and scholastic and adult success. Yet the study of creativity is not nearly as robust as one would expect, due in part to the preponderance of myths and stereotypes about creativity that collectively strangle most research efforts in this area. The root cause of these stereotypes is the lack of adequate precision in the definition of creativity. The body of the article is devoted to specific suggestions for conceptualizing and defining creativity to maximize its potential contributions to educational psychology.

Creativity is an integral part of any understanding of human education and psychology. During the first few decades of last century, especially when behaviorism held sway over large segments of the behavioral and social sciences, theorists, researchers, and practitioners rarely explored creativity and its numerous positive benefits. But in the last 50 years, researchers have extolled the virtues of creativity regarding the intellectual, educational, and talent development of children (Guilford, 1950; Renzulli, 1994; Torrance, 1962), both generally and in specific content areas (Blicbau & Steiner, 1998; Bloland, 1987; Innamorato, 1998). The concept of building on strengths as opposed to remediating weaknesses has a wide appeal: The business sector has identified creativity as an engine of economic and technical development, both in modern and developing countries (Akarakiri, 1998; Amabile, 1998; S. C. King, 1998; Robinson & Stern, 1997; Stevens & Burley,

1999), and corporations are investing very heavily in creativity education. Applications of creativity research to technology—and vice-versa—are also beginning to pick up steam (Clements, 1995; Kappel & Rubenstein, 1999).

In addition to these rather traditional perspectives on the benefits of creativity, educators and psychologists from diverse specialties have noted creativity's contributions in areas as diverse as workplace leadership (Tierney, Farmer, & Graen, 1999); adult vocational and life success (Torrance, 1972b, 1981); healthy psychological functioning, coping, and emotional growth (B. J. King & Pope, 1999; Russ, 1998); maintenance of healthy, loving relationships (Livingston, 1999); and more effective therapeutic treatments (Kendall, Chu, Gifford, Hayes, & Nauta, 1998). Educational and school psychologists, reacting to recent concerns over youth violence, have called for explorations of the role creativity can play in reducing violence and promoting conflict resolution (Kovac, 1998; Plucker, 2000). These explorations are especially promising in the use of creativity to help students become better interpersonal and intrapersonal

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problem solvers, although suggestions also range from the use of humor to defuse potentially violent situations (Jurcova, 1998) to learning more effective conflict resolution strategies (Webb, 1995). There is also a body of research on the use of creativity to help people deal with serious problems, including alcoholism (McCracken, 1991), grief (C. B. Davis, 1989), and trauma (Terr, 1992).

A specific example of the overlap between creativity and educational psychology is the case of constructivism. Constructivist approaches to learning and teaching stress the role of knowledge creation as opposed to knowledge transmission. Creativity scholars have examined the creation, implementations, and evaluation of ideas for decades, and much of this research is directly applicable to educational psychologists' current constructivist efforts. Not surprisingly, the recent emphasis on and debates involving situated cognition and cognitive apprenticeship (e.g., Barab & Duffy, 2000; Kirshner & Whitson, 1997, 1998) parallel similar systems efforts and discussions in the creativity literature (Baer, 1998; Plucker, 1998; Renzulli, 1994).

However, in addition to overlapping with constructivist efforts, creativity research can also contribute to the study of constructivism, especially social constructivist approaches to learning and teaching. Constructivism has come under general criticism recently, especially regarding confusion surrounding the role of the teacher and the belief that the research base on constructivism is perilously thin, old wine in new bottles, or even nonexistent (Baines & Stanley, 2000; Fox, 2001; Nickerson, 1993; Smerdon & Burkam, 1999). Creativity theory and research provide frameworks for analyzing the wide range of influences on the learner during the creation of understanding. These and other models also suggest ways in which the roles of teachers, students, and others can complement each other during the learning process.

For example, Amabile's (1983, 1996) componential model of creativity is a social psychological framework for understanding how products or ideas are constructed, with specific mechanisms proposed for social and environmental influence on creativity, of which learning is considered a part. Not only does this approach mirror social constructivist and other distributed perspectives on learning and cognition (von Glasersfeld, 1995; Wertsch & Toma, 1995), Amabile's model is also sufficiently detailed to guide instructional practice. This detail is often hard to find in the often philosophical writings on social constructivism. Amabile's model is supported by a considerable body of data, both from Amabile and her colleagues and from other researchers. Another approach, Csikszentmihalyi's (1988; Nakamura & Csikszentmihalyi, 2001) systems model of creativity, provides a detailed mechanism through which intellectual activity is accepted as creative accomplishment. The model's consideration of the individual and different groups of stakeholders mirrors the idea of distributed cognition and intelligence within and across disciplines (e.g., Cole & Engström, 1993). The work of Amabile, Csikszentmihalyi, and their colleagues are just a few of many possible examples, with many approaches having been widely applied in schools, businesses, informal education, and artistic settings. Many efforts within the domain of creativity can be viewed as focusing on and informing social constructivist models of learning, and the collective conceptual and empirical foundations of these efforts can inform the work of scholars who do not appear to be aware of these efforts.

Creativity research and application may also have positive implications for educational psychology as a whole. For example, creativity may serve as a foundation for understanding and applying constructivism to learning and treatment (Chessick, 1998; Viney, 1996). Gelatt (1995) took this a step further by implying that acceptance of chaotic thought, and therefore creativity, as a theoretical foundation of psychology may lead to a greater understanding of the individual in a variety of settings. More pragmatically, a thorough understanding of the creative processes underlying theoretical and empirical efforts in any psychological subdiscipline may advance psychologists' work in these areas (e.g., Simonton, 1999; Sternberg, 1999; Sternberg & Lubart, 1996). As a case in point, Simonton's (1988) chance configuration theory posited that the most important predictor of creativity quality among scholars is their productivity. This stands in contrast to frequent debates, and conventional wisdom, about the supposedly poor quality of highly productive academics. Simonton acknowledged that perfectionists (i.e., scholars who produce few but high-quality pieces) and mass producers (high output, low quality) exist, but he argued convincingly that creativity research shows these two groups to be the exceptions rather than the rule. Simply put, scholars with the biggest impact on their fields tend to be the most productive members of those fields, with a relatively constant ratio of high- to low-impact pieces throughout one's career. If educational psychologists want to influence the quality of educational systems, they should take from creativity research the observation that quantity of work is important.

These are but a few of the areas in which creativity is being applied, but they provide a sense of the extraordinary breadth of applications that educational psychologists may pursue. There appears to be no shortage of areas in which creativity can be applied constructively to improve people's lives—and, more important, areas in which people can use creativity to improve their own lives.

PROBLEMS

Although the potential applications of creativity are well documented, observers over the past several decades, from Guilford (1950) to Sternberg and Lubart (1999), have noted that this potential is rarely fulfilled. Classrooms generally do not appear to be creativity-fostering places, primarily due to the biases of teachers and traditional classroom organization (Furman, 1998; Torrance, 1968), lack of meaning-

ful curriculum differentiation (Archambault, Westberg, Brown, Hallmark, Zhang, & Emmons, 1993; Westberg, Archambault, Dobyns, & Salvin, 1993), and lack of originality in classroom-based enhancement efforts (Plucker & Beghetto, in press).

For example, the differences between the seminal work of Guilford and Torrance in the 1960s and 1970s and the most common creativity exercises in today's classrooms and workplaces are semantic, at best. Guilford and Torrance focused in large part on exercises devoted to the enhancement of divergent thinking, providing multiple responses to a single prompt or problem (i.e., think of as many objects as you can that have wheels). Although divergent thinking is often considered to contribute to creativity, the constructs are not synonymous, and theorists over the past 20 years have moved toward more inclusive models of creativity in which divergent thinking plays an important but small role. In one example, the activities employed by one of the country's leading innovation firms (and providers of creativity training) are primarily highly repackaged versions of classic divergent thinking exercises, such as attribute listing, forced combination of ideas or concepts to arrive at new ideas, and mind mapping (cf. Hall, 1995, to Renzulli, 1976, or Torrance, 1962). Our knowledge of creativity—and thinking and learning in general—has advanced over the past several decades, but our strategies for enhancing creativity have changed very little.

The problems exist beyond the walls of our classrooms. Creativity is too often associated with negative assumptions and characteristics held by researchers, practitioners, and laypeople. As a result, people who study problem solving, abductive reasoning, cognitive flexibility, or functional fixedness would never dare utter the "C word," yet they are essentially investigating aspects of creativity. This situation mirrors Sternberg and Lubart's (1999) observation that "Creativity is important to society, but it traditionally has been one of psychology's orphans" (p. 4). They identified six roadblocks to the study of creativity: mystic and spiritual origins; negative effects of the numerous pop psychology and commercialized approaches; early work conducted in relative isolation from mainstream psychology; elusive or trivial definitions; negative effects of viewing creativity as an extraordinary phenomenon; and narrow, unidisciplinary approaches. Plucker and Beghetto (in press) offered a similar set of roadblocks to the lack of creative approaches to enhancement efforts: emphasis on eminent rather than everyday creativity, overemphasis on the role of divergent thinking as part of the creative process, and insularity of theory and research. The literature generally supports the existence and negative effects of these roadblocks (see Sternberg & Lubart, 1996; Treffinger, Isaksen, & Dorval, 1996). However, these lists are not without controversy, and, perhaps as a result, little effort appears to be expended to remove these roadblocks.

With regard to studying and enhancing creativity, we believe that the numerous roadblocks have led to an additional, more immediate problem. More than any other factors, the preponderance of faulty prior conceptions about creativity creates an atmosphere that severely restricts researchers' and practitioners' ability and desire to study and apply creativity. As with other domains, most notably science, students and scholars of creativity enter empirical examinations of creativity with robust and resilient prior-conceptions—many of which impede the study and enhancement of creativity. In the following sections, we analyze some of the most damaging prior-conceptions and propose a future direction that may begin to remedy the situation.

Pitfalls

In an effort to examine prior-conceptions of creativity, we have focused on what is or is not an accurate conception of creativity, rather than focusing on *who* is or is not creative. In doing so, we have adopted the following three-pronged approach: (a) recognize that individuals have robust implicit conceptions of creativity, (b) create opportunities for those conceptions to be made explicit, and (c) test the viability of those conceptions by attempting to falsify those claims with extant and on-going creativity research. In the course of our work, we have identified several faulty conceptions of creativity. Many if not all of these myths are widespread both in practice and in the research literature (Isaksen, 1987; Treffinger et al., 1996). Common themes that run throughout the myths are their pervasiveness, even among creativity scholars, and their exclusionary undertones (i.e., their role in reinforcing who *is not* creative). In the following sections, we highlight a few of these myths and present evidence to the contrary.

Myth 1: People are born creative or uncreative. The myth that people either have or do not have creativity, with no capacity for enhancement, is one of the most pervasive and stubborn myths surrounding creativity (Treffinger et al., 1996). Decades of research on positive training and educational effects and, lately, environmental techniques for fostering creativity strongly refute this myth (e.g., Amabile, 1983, 1996; Fontenot, 1993; Hennessey & Amabile, 1988; Osborn, 1963; Parnes, 1962; Pyryt, 1999; Sternberg & Lubart, 1992; Torrance, 1962, 1972a, 1987; Westberg, 1996).

This myth probably originates from the mystification of creativity cited by Sternberg and Lubart (1999) and Treffinger et al. (1996) and the traditional accent on eminent (i.e., "Big C") creativity. Big C creativity involves the study of clearly eminent creators, which has had a significant, positive impact on our understanding of creativity. But Big C creativity may also have a negative side effect by furthering the idea that creativity is only possessed by a blessed few—an idea that is quite controversial and often criticized (Halpern, 1996; Osborn, 1963; Plucker & Beghetto, in press; Sternberg & Lubart, 1999). Disappointingly, nearly all of the articles in a recent *American Psychologist* special section on creativity took a Big C approach (Sternberg & Dess, 2001). Although

few researchers would claim to believe in a "Big C versus little c" distinction in creativity, this stereotype is very widespread in practice, especially among teachers who tend to believe that creativity is a rare trait possessed by few students (Fryer & Collings, 1991).

Myth 2: Creativity is intertwined with negative aspects of psychology and society.   The "lone nut" stereotype of creativity—that of the strange, creative loner with a dark side—is surprisingly widespread. Isaksen (1987) described this stereotype as the belief that "you must be *mad*, weird, neurotic or at least unusual" (p. 2) to be considered creative . Large numbers of studies have been published on the relationship between creativity and drug use, criminality, and mental illness, with many presupposing a strong link between these deviant behaviors and conditions and creativity (e.g., Brower, 1999; Hershman & Lieb, 1998; Ludwig, 1996; Steptoe, 1998). Not surprisingly, these negative stereotypes reveal themselves in applied situations, hindering enhancement efforts. For example, several studies provide evidence that teachers view creative students as nonconformists and potential troublemakers (Chan & Chan, 1999; Guencer & Oral, 1993; Scott, 1999). These negative associations are so strong that they often exist when teachers otherwise express strong positive feelings about the importance of creativity (Dawson, 1997; Westby & Dawson, 1995).

Little of this research, however, provides conclusive evidence of strong, generalizable relationships (Plucker & Dana, 1998a, 1999; Waddell, 1998). For example, Norlander (1999), among many others, provided evidence that alcohol enhances some skills that may lead to creativity but hurts many others. Most important, these deficits appear most strikingly in secondary processes (e.g., preparation, communication). Therefore, alcohol may lower inhibitions, enhancing opportunities for creative thought, but it may lower one's problem-finding and communicative abilities, producing a net deficit in creative productivity (Plucker & Dana, 1999). This is not to say that creativity cannot emerge from negative circumstances, although the evidence suggests that the context of the negativity is important: Parental conflict may be positively related to later adult creativity (Koestner, Walker, & Fichman, 1999), but family alcohol abuse may not (Noble, Runco, & Ozkaragoz, 1993; Plucker & Dana, 1998b).

In Isaksen's (1987) opinion, this stereotype emanates from the belief that creativity is essentially novelty. Novelty can be viewed as a form of deviance; therefore, anyone who is deviant in one sense may be likely to exhibit other forms of deviance. However, as many researchers have concluded, this is not necessarily the case (e.g., Neihart, 1998; Plucker & Runco, 1999). Again, the focus on Big C creativity also encourages this myth—nearly all studies that show strong creativity–"dark side" relationships are based on case studies of eminently creative people. Even if a strong positive correlation were found between creativity and criminality, mental illness, or drug abuse among eminent creators, this would not inform our daily efforts to improve most people's lives with creativity.

This myth is especially damaging because it clouds and otherwise distorts the real issues. Many people focus on the fact that alcohol use may cause creativity, but better questions are probably how stereotypes about creativity may lead creative individuals to drug use or how creativity can be used to combat alcoholism. And what of the evidence that some forms of deviance, such as eccentricity, may be a matter of personal choice (Weeks & James, 1995)? If nothing else, the negative perspective of creativity creates an image in psychologists' minds that makes positive applications of creativity very difficult. Again, as Isaksen (1987) suggested, "there is no clear evidence to suggest that to be creative, a person must also be neurotic or psychologically disturbed" (p. 3). We need to be tolerant of deviance, but we do not need to expect it in all forms and types of creativity.

Myth 3: Creativity is a fuzzy, soft construct.   In courses and at professional conferences, we are always astonished at the degree to which people see the stereotypical creative person, if not as a dangerous loner, as a barefooted hippie running around a commune while rubbing crystals on his forehead. This stereotype leads many psychologists to think of creativity as "soft psychology," even though many of them study related constructs. The evidence in support of this stereotype is very thin, with research strongly suggesting that creativity is not a "fuzzy" or "soft" construct. For example, books on creative cognition have strong, well-defined themes that address creativity in a serious manner (Smith, Ward, & Finke, 1995; Ward, Smith, & Vaid, 1997).

Commercialized training programs, many with weak theoretical and empirical foundations, and antireductionist perspectives by many individuals (i.e., a desire to cloak creativity in a mystical aura) factor into this perception, but misinterpretation of lists of creative personality characteristics and behaviors may be an additional cause of this myth. Traits such as "gets lost in a problem," "sensation seeking," "open to the irrational," "impulsive," "uninhibited," and "nonconforming" can easily lead to the stereotype of the creative beatnik, although a more pragmatic profile can be drawn from the same lists: capable of concentrating, strives for distant goals, asks many questions, goes beyond assigned tasks, self-organized, flexible in ideas and thought (all drawn from G. A. Davis', 1999, comprehensive list).

Ironically, many of these characteristics were identified during studies of college students and successful professionals in a wide variety of fields (e.g., Barron, 1969; G. A. Davis & Subkoviak, 1978; Domino, 1970; MacKinnon, 1961), groups that are as far from the stereotypical image as one can hope to get. G. A. Davis (1999) wisely cautioned that "not all traits will apply to all creative persons" (p. 79), which the research strongly supports. For example, although idealism is often included in lists of creative personality traits, Yurtsever (1998) provided evidence of a lack of positive correlation be-

tween creativity and idealism. Again, a combination of the roadblocks suggested by Sternberg and Lubart (1999) and other authors appear to be at work.

Myth 4: Creativity is enhanced within a group.   This myth is particularly evident in applications within the business world, where group creative activities are assumed to be more productive than individual efforts (e.g., Robinson & Stern, 1997; White, 2002). But even treatments of individual creators, such as Richard Florida's (2002) provocative work on the "creative class" as an emerging demographic group, contain the implicit theme that groups are more creative than individuals. As with the other myths, research provides a more balanced picture of the relative roles of individuals versus groups during creative activity. Brainstorming research generally provides evidence that traditional idea generation in groups results in a less creative pool of ideas than if people are allowed to brainstorm ideas individually and pool them later in the process (Diehl & Strobe, 1986; Finke, Ward, & Smith, 1992). Several authors have cautioned against overlooking the role of the individual within a group or larger organization (Dacey & Lennon, 1998; Kurtzberg, 1998; W. M. Williams & Yang, 1999).

This misperception is relatively new and evolved as a reaction to the perceived overemphasis on the individual in earlier creativity research. The pendulum needs to swing back toward a more balanced position, allowing psychologists and educators to balance the needs and abilities of individuals with the goals of groups.

WHERE DO THESE MYTHS COME FROM?

Although these myths are widely held, the study of creativity is moving in a promising direction. Systems approaches of creativity (see Rathunde, 1999) have become the theoretical foundation of the field, and many dedicated research programs in cognitive, social, and educational psychology have been developed, helping to overcome many of the roadblocks mentioned earlier. Given the current fascination with creativity and its application in many sectors of society, we are hopeful that the field will continue to grow and reach its potential as a contributor to educational psychology.

However, the roots of these myths have grown very deep, to the point that many of them are still widely held in spite of the theoretical and empirical advances in the field and the often overwhelming evidence of the misperceptions' fallibility (Treffinger et al., 1996). The roots go so deep that people often have a visceral reaction when confronted with research that debunks particular myths. Rather than promoting creativity as an integral part of psychology and education, discussing creativity often leaves people very confused!

For the reasons noted previously, creativity researchers and theorists are partly responsible for the emergence and proliferation of these myths. The first and most important step to maximizing creativity's contributions to educational psychology is to attack the taproot of the myths and misperceptions: the lack of a standard, carefully constructed definition of creativity. Like weeding dandelions, removing the other roadblocks may help temporarily, but the myths will quickly reemerge unless the taproot is pulled from the soil. As R. L. Williams (1999) noted, "higher-order cognitive constructs have much surface appeal, [but] their utility is tied to the clarity and fidelity of their definitions and assessment procedures" (p. 411). The importance of a standard definition was called to our attention as we recently reflected on the state of the field. One senior colleague, after attending a talk by the first author, contacted him later to share her impressions, one of which was essentially, "It amazes me that the field still doesn't have a standard definition of creativity." She makes a strong point—Cropley (1999b), Parkhurst (1999), Sternberg (1988), Taylor (1988), and many others have pointed out the amazing breadth of definitions currently in existence.

Unfortunately, the path to a parsimonious, explicit, and empirically testable definition is often obfuscated by the misconceptions and fascination that the construct generates, a fascination that has held sway over humans from as early as the ancient Greeks. This fascination has deified the construct to the point where researchers do not want to rock the boat by carefully considering what really lies behind the curtain of creativity. As a result, many creativity researchers approach the study and practice of creativity with a great deal of fervor, but have unfortunately followed the sequence of fire, aim, ready. In other words, elaborate theories of creativity, full-blown empirical creativity studies, ambitious creativity program implementation, and prescriptive recommendations regarding creativity are put forth prior to serious consideration and clear definition of the construct on which these activities are based.

When a definition of creativity is offered in the literature, it often is prefaced with an "oh, by the way" tone. It is almost as if creativity researchers and practitioners are afraid that, in pinning themselves down to a concrete, operational definition, they will somehow destroy the complexity and fascination that the construct generates (and offend their peers within the field in the process). This practice results in a splintering of education's and psychology's brightest researchers; some become fascinated with the topic, whereas others become frustrated and cynical, and the remainder take on the Herculean effort of legitimizing a program of research that is based on a construct that is implicitly understood and valued but explicitly defined in only the most tenuous terms. Examples in which authors explicitly state their definition, such as Sternberg and Lubart (1999), are rare. Without an agreed-on definition of the construct, creativity's potential contributions to psychology and education will remain limited. Of course, others have shared similar concerns over the decades (e.g., Yamamoto, 1965), but the situation stubbornly remains the same.

Breadth and Depth of the Problem

In an effort to illustrate the problem caused by the lack of a standard definition (or of *any* definition), we performed a content analysis of creativity articles appearing in refereed journals over the past 3 years. In drawing on the professional literature to teach our courses and conduct our own research, we have noticed that in peer-reviewed journal articles, *creativity* is often cited as a predictor or outcome variable (e.g., external evaluation decreases creativity; increasing employee creativity in the workplace will in turn increase organizational effectiveness; constructivist teaching approaches increase student creativity). However, clear definitions of creativity are rarely consistent, if offered at all.

We conducted the content analyses in two phases. First, we examined the use of the term *creativity* in a sample of peer-reviewed business, education, and psychology journal articles. The selection criteria were to select 30 articles (i.e., 10 each from business, education, and psychology journals) that included the term *creativity* in the title of the article. The articles, starting with the most recent articles and working backwards, were located in the full-text holdings of the EBSCO electronic database. Within EBSCO, *Academic Search Premier*, *Business Source Premier*, *PsychArticles*, and *ERIC* subdatabases were used. We limited the search to full-text, peer-reviewed articles, and the 30 selected articles ranged in publication date from March 1996 to August 2002. We developed a protocol (Appendix) that allowed us to record the occurrences of the word *creativity* in each article, any explicit or implicit definitions of creativity, and the number of uses of the word *creativity* before a definition was provided.

In the second phase of the content analysis, we conducted similar analyses with a sample of articles from the two major creativity journals, *Creativity Research Journal* (*CRJ*) and *Journal of Creative Behavior* (*JCB*). Starting with the most recent issues, we selected the first 30 articles from each journal that used the term *creativity* in the title. This sample of 60 articles was then analyzed using the protocol. Selected articles ranged in publication date from winter 1998 to spring 2002 (*JCB*) and January 1999 to January 2002 (*CRJ*).

Of the 90 selected articles, only 34 (38%) provided an explicit definition of the term *creativity*. Furthermore, 37 (41%) provided an implicit definition, and 19 (21%) provided no definition of the construct. Definition rates by journal appear in Figure 1. We anticipated that implicit definitions or a lack of definition would appear most often in the creativity journals, given an assumption that "people know what we are talking about." However, the rates of explicit definition are mixed, with 50% in *CRJ*, 33% in the out-of-field journals, and 30% in *JCB*. Examples of explicit definitions and how they were coded are included in Table 1.

The most common characteristics of explicit definitions were uniqueness (*n* = 24) and usefulness (*n* = 17). Of interest, all 17 articles that included usefulness in their definition also mentioned uniqueness or novelty. The most common charac-
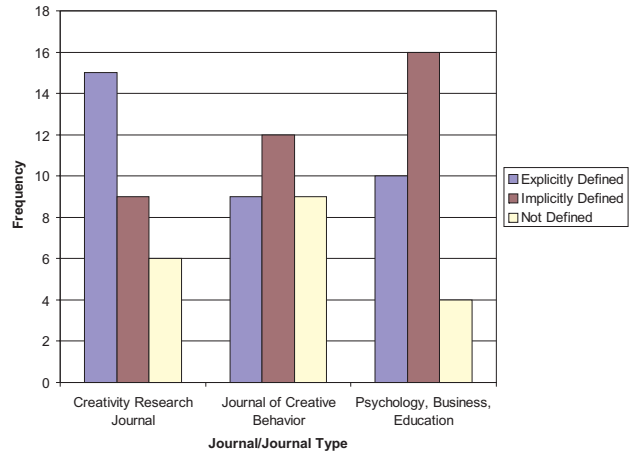

FIGURE 1   Definition rates for selected journal articles.

teristics of implicit definitions were unique (*n* = 17) and aspects of divergent thinking or ideation (*n* = 13), such as fluency, flexibility, originality, and elaboration. Given the overlap between uniqueness and traditional conceptions of ideation, the data suggest that most implicit definitions relied on traditional conceptions of creativity research and training, which relied heavily—if not exclusively—on divergent thinking (e.g., Guilford, 1967; Torrance, 1962). Characteristics of definitions classified as "other" appeared in very few cases and ranged from humor to insight to personality characteristics (e.g., openness to new experiences, psychoanalytic conceptions, cognitive/thinking styles). Frequencies of common characteristics of definitions appear in Figure 2.

Authors who provided explicit definitions used *creativity* an average of 67 times (*SD* = 46), ranging from 5 to 193. Authors who did not provide an explicit definition used *creativity* in their articles an average of 32 times (*SD* = 30), ranging from 3 to 167. Two articles used the term over 100 times without defining it. Among those who did explicitly define the construct, the definition appeared after an average of 13 uses of the term (*SD* = 18), ranging from 1 article that defined the term in its first use to an article that mentioned creativity 79 times before defining it (out of a total of 86 uses in that article).

In very few cases, the author presented a precise definition of creativity early in the article. For example, Huber (1998) stated that he was using a definition similar to that used by the U.S. Patent Office to evaluate patent applications: new, useful, and unobvious. However, most authors did not explicitly define creativity, and those that did provided a wide range of definitions. We interpret these results as evidence in support of our hypothesis: We do not define what we mean when we study "creativity," which has resulted in a mythology of creativity that is shared by educators and researchers alike. In essence, all of these researchers may be discussing completely different topics, or at least very different perspectives of creativity. This is not merely a case of comparing apples and oranges: We believe that this lack of focus is tantamount

TABLE 1
Examples of Explicit Definitions of Creativity

Definition	Unique	Artistic	Psychometric	Usefulness	Stakeholder Defined	Accessible	Divergent Thinking	Problem Solving	Other
"It must be original, it must be useful, or appropriate for the situation in which it occurs, and it must be actually put to some use [Martindale, 1989, p. 211]" (Sass, 2001, p. 55).	X			X					
"According to Amabile (1996, 1998) creative thinking refers to how people approach existing problems and come up with solutions" (Jung, 2001, p. 186).						X		X	
" … the openness to ideas and the willingness to encourage the exploration of the unknown, even if not easily manageable" (Edwards, 2001, p. 222).	X					X			
"Managerial creativity is defined as the production by manager of new concepts ideas, methods, directions, and modes of operation, that are useful to the organization" (Scratchley & Hakstian, 2001, p. 367).	X			X	X				
" … defined by making reference to the idea of novelty and uniqueness" (Rubenstein, 2000, p. 2).	X								
"Creativity was operationally defined as creativity ratings applied to students' proposed solutions to an engineering problem … novelty combined with appropriateness, value or usefulness" (Fodor & Carver, 2000, p. 383).	X		X	X					
"Creativity may be viewed as the ability to form remote ideational associations to generate original and useful solutions to a given problem" (Atchley, Keeney, & Burgess, 1999, p. 485).	X			X				X	
" … the ability to create is defined as the bringing into existence of something new" (Hasse, 2001, p. 200).	X								
"Singaporean adults … also associated uniqueness, imagination, and art with creativity" (Tan, 2000, p. 266).	X	X							Imagination
" … divergent thinking, the generation of new and possibly useful ideas" (Schuldberg, 2001, p. 7).	X			X			X		

to comparing apples, oranges, onions, and asparagus and calling them all fruit. Even if you describe the onion very well, it is still not a fruit, and your description has little bearing on our efforts to describe the apple. For example, Domino, Short, Evans, and Romano (2002) implicitly defined *creativity* as the suspension of control of unconscious and preconscious elements that are consciously organized into creative solutions. These authors are clearly studying a different "creativity" than Huber (i.e., the production of new, useful, and unobvious things), and one should not be surprised if au-
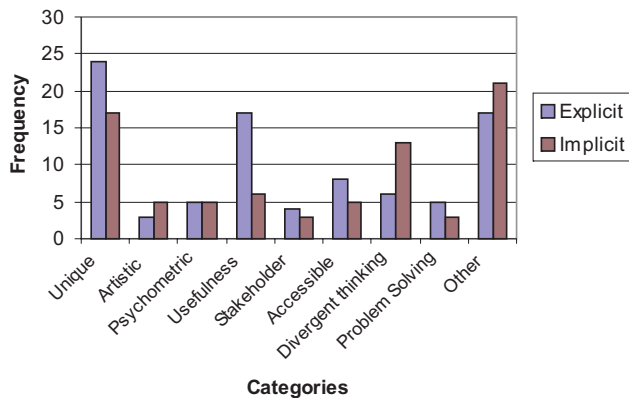
FIGURE 2   Types of explicit and implicit definitions of "creativity."

thors using such radically different definitions arrive at very different conclusions about the nature of creativity.

APPROACHING A DEFINITION OF CREATIVITY

The results of our content analysis serve as a concrete representation of the "definition problem" surrounding the study of creativity. These findings substantiate our fear that creativity is rarely explicated in the professional literature. Without a clear definition, creativity becomes a hollow construct—one that can easily be filled with an array of myths, co-opted to represent any number of divergent processes, and further confuse what is (and is not) known about the construct.

Although these results illustrate the troubling aspects surrounding the study of creativity, we are optimistic about the future of creativity research. In fact, the very process of conducting such an analysis provided us with the necessary material from which a useful definition of creativity could be constructed.[1] Drawing on the articles that did explicitly define creativity, as well as those that provided enough contextual information from which a definition could be inferred, we were able to identify several reoccurring, constituent elements that could serve as a basis for generating a synthesized definition of creativity. Our proposed definition is:

> Creativity is the interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both *novel and useful* as defined within a *social context.*

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[1]We are grateful for the recommendation from reviewers to consider constructing a definition of creativity out of our content analysis (similar to what Tschannen-Moran & Hoy, 2000, did in their construction of a multidimensional definition of "trust").

In the following sections, we describe the various components of this definition to clarify the defining elements of creativity and provide a basis from which our definition can be critiqued, examined, and utilized in subsequent scholarly discourse.

Interaction of Aptitude, Process, and Environment

In the construction of our definition, we focused on the *interaction* among aptitude, process, and environment, as we feel that even when this interaction is not explicitly stated, it is strongly implied. Our concept of aptitude is influenced by Snow's use of the term, which represents ability, affective influences such as attitude, and motivation (Stanford Aptitude Seminar, 2002). We use aptitude rather than trait due to our perception of a trait as a static, innate characteristic, whereas aptitude refers to a more dynamic characteristic or skill-set that can be influenced by experience, learning, and training.

Within and across the various articles surveyed in our content analysis, authors focused on the traits of creativity, the process of creativity, attitude or personality factors, or some combination thereof. For example, James and Asmus (2001) reported on the traits of creativity:

> Eysenck, in fact, referred to variables such as divergent thinking test scores that we are calling types of cognitive skills as trait creativity … (personality characteristics of) self esteem, independence, introversion, perseverance, social poise, tolerance for ambiguity, willingness to take risks, behavioral flexibility, and emotional variability. (pp. 149–150)

Jung (2001) alluded to the process of creativity: "According to Amabile (1996, 1998) creative thinking refers to how people *approach* existing problems and *come up* [italics added] with solutions" (p. 186). Van Hook and Tegano (2002) also stressed the process of creativity: "for this study creativity has been defined as the 'interpersonal and intrapersonal process by means of which original, high quality, and genuinely significant products are developed'" (p. 1).

Still others highlight the interplay between trait and process. For example, Diakidoy and Constantinou (2001) explained that "creativity has been conceptualized as an ability or characteristic of the person or as a cognitive process influenced by thinking styles or personality trait" (p. 401). Cox and Leon (1999) were more explicit in embracing the interplay between trait and process: "This study concerned with creativity defined as both a process and individual difference and it therefore includes creativity measures of divergent thinking, perception, and personality biography" (p. 26).

The environmental-influences aspect of our definition was rarely found in the surveyed articles, but the research literature provides substantial evidence that specific aspects of one's environment are positively related to the existence of creativity (see, e.g., Amabile, 1996, and Csikszentmihalyi,

1988, among many others). Indeed, Barab and Plucker (2002) recently argued that environmental (construed broadly) and individual factors are inseparable influences on talent development and creativity.

Focusing on the interaction among aptitude, process, and environment helps to dethrone one of the most prevalent and debilitating myths surrounding creativity (i.e., people are born creative or uncreative) and helps to buffer against the generation of additional myths. Recognizing the interaction also speaks to the promise of education and intervention and thereby shatters the myth that creativity is a static trait that cannot be enhanced. As such, purposive efforts can be utilized to cultivate creative aptitudes (e.g., tolerance for ambiguity, flexibility in thinking, perseverance, motivation for creativity) as well as processes that may enhance the probability for creativity (e.g., brainstorming, creative problem solving, and problem-finding processes). In sum, creativity emerges from an interaction among certain aptitudes, specific cognitive processes, and influences from the environment in which the individual or group exists.

Perceptible Product

At the risk of sounding like naïve empiricists, we specify a criteria of perceptibility—or more narrowly, observability—in our definition. We do this not only because tangibility is stated or implied in the various definitions surveyed in our analysis, but also because it helps promote the scientific study of creativity. Several authors, such as Hasse (2001), directly point out the observable criteria in their definition of creativity: "the ability to create is defined as the ability to *bring into existence* [italics added] something new" (p. 200). Other authors strongly imply that creativity is the production of something, although they are vague about the nature of that something: "Creativity may be viewed as the ability to form remote ideational associations to *generate* original and useful *solutions* [italics added] to a given problem" (Atchley, Keeney, & Burgess, 1999, p. 485).

The criteria of a perceptible outcome is useful because without observable and measurable evidence of some act, idea, or performance, it is difficult to determine whether creativity has occurred. By working backward from tangible artifacts (e.g., creative products, documentation of creative behaviors), latent theories of creative action can be inferred (see Argyris & Schon, 1974, for a description of making theories-in-use explicit). Such theories of creative action may further illuminate the aptitudes, processes, and environmental factors that most effectively lead to creative behavior. A focus on perceptibility also moves research away from the study of personality and other areas that may lead to myth and stereotype formation (e.g., the use of personality checklists to identify creative children).

Making a determination of what is and what is not creative can be tricky without relying on artifacts of behavior or some other form of observable or measurable evidence. For exam-

ple, the following question was recently posed to the second author during a presentation of an earlier draft of this article: *Was Emily Dickenson creative prior to publishing her first poem?* Based on the tangibility criteria, the answer appears to be a simple "no." But such a response is circular and rigidly empirical; the criteria of perceptibility does not require a physical product. As such, the answer to the Emily Dickenson question is not a simple yes or no. Rather, judgment of her creativity would need to be withheld until sufficient evidence of tangible creative production (e.g., poems) could be evaluated by her community of practice (i.e., those who have legitimate membership and a stake in the domain of poetry). Musing over whether a person is creative before they create are speculations that are interesting, but it does not necessarily advance the cumulative knowledge of creativity.[2]

Although we recognize that creativity involves latent, unobservable abilities and processes, we argue that the generating, identifying, and studying of documentable artifacts (e.g., behaviors, products, ideas) serves as necessary evidence from which the presence of creativity can be inferred, determined, and evaluated.

Novel and Useful

Perhaps the least surprising aspect of our definition is the combination of novelty and usefulness. Overwhelmingly, the combination of novelty and usefulness were the most prevalent facets of both explicit and implied definitions of creativity. For example, Eisenberger, Haskins, and Gambleton (1999) stated that "creativity involves the generation of *novel* behavior that meets a standard of quality or *utility* [italics added]" (p. 308), and Fodor and Carver (2000) defined student work as creative if the products showed evidence of "*novelty* combined with *appropriateness*, *value* or *usefulness* [italics added]" (p. 383).

Novelty and usefulness are two facets of creativity found in definitions both within our content analysis and when surveying the creativity literature in general (e.g., Cropley, 1999a; Halpern, 1996; Sternberg & Lubart, 1999). Moreover, scholarship on the assessment of creative products implicitly includes the elements of novelty and usefulness (e.g., Besemer & O'Quin, 1986; Reis & Renzulli, 1991). Novelty and usefulness often characterize implicit theories of creativity (Runco & Bahleda, 1986; Runco, Johnson, & Bear, 1993; Sternberg, 1985).

As with the aptitude–process-environment interaction, we argue that the important interaction between novelty and usefulness results in a tangible product being defined as "creative." The major advantage of specifying the interplay between novelty and usefulness, aside from being widely held,

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[2]Of interest, the mere mention of Dickenson reinforces our belief about the pervasiveness of creative myths due to the Big C approach. It is widely believed that Dickenson never published her poetry, when in fact she did publish a limited number of pieces that were widely ignored.

is that it corrodes the foundation of many of the myths and stereotypes. For example, drug use may help lessen inhibition and promote original responses, but the usefulness criteria creates a standard that demands that these original responses have the potential to be applied successfully to a context, any context, in which the responses are useful. Individuals using drugs have a difficult time meeting this criteria of utility. The same argument could be applied to research on the relationship between creativity and mental illness, and the definition effectively squashes the stereotype of the wild and free creator running through a field of daisies.

Social Context

In most cases, definitions of creativity focus on the individual—particularly if ability or aptitude is stressed more than processes. However, all definitions of creativity imply the necessity of a social context because such a context is requisite for determining whether (and how) a person, action, or product will be defined or judged as creative. For example, Richards (2001) explained that "[Everyday creativity is] originality within a social context … [eminent creativity] accomplishments that are recognized by society at large" (p. 114). Similarly, Nuessel, Stewart, and Cedeño (2001) implicitly highlighted the social context by noting that creativity "fashions or defines new questions in a domain in a way that is initially considered novel but ultimately becomes accepted in a particular cultural setting" (p. 700). Yet another example of the social context is found in Redmond, Mumford, and Teach's (1993) definition: "Creativity is reflected in the production of novel, socially valued products" (p. 120).

Our hope is that, by explicitly recognizing the social context in our definition, creativity researchers and consumers of that research will consider and address the question of *creativity for whom and in what context?* Having a definition that situates creativity in a particular context helps to bridge a connection between Big C creativity (study of eminence) and little c creativity (study of everyday creative acts), thereby broadening the study of creativity. As a result, the specification of the contextual parameters allows creativity studies of 4th-grade science projects to be viewed as valid as creativity studies of Nobel Prize winners (e.g., this particular 4th-grade science project is creative in the context of fourth graders and science fairs or for this particular student). At the same time, specifying context does not allow for empty relativistic claims that a 4th-grade science project necessarily is as creative or significant as a Nobel Prize-winning discovery (e.g., this particular 4th-grade science project is viewed as quite pedestrian when considered within the context of the projects and discoveries of Nobel Prize-winning scientists, but the distinction matters little to the fourth grader or the scientist).

In summary, the addition of social context to the previously discussed facets of our definition (i.e., interaction among aptitude, process, and environment; criteria of tangibility; and the combination of uniqueness and utility) provides creativity researchers with a broad framework from which they can begin to articulate what creativity "looks like" in light of the various stakeholders who will be evaluating the creative act, person, or product.

CONCLUSION

The fate of the study of creativity is tenuously resting in the hands of today's social scientists. Currently, interdisciplinary scholarly efforts are taking the study of creativity in positive directions, with potential implications for a variety of problems and issues within educational psychology. As promising as these current directions are, unless the definitional problem is addressed, creativity research will continue to be impeded by lack of direction, damaging mythologies, and general misunderstanding. The definition that was developed from our content analysis serves as a tool with which subsequent work can test, examine, and build an understanding of creativity that is meaningful and relevant to researchers and practicing educators.

With respect to subsequent creativity research, we propose an approach akin to responsible research reporting. As researchers are now required to report effect sizes (and in some cases confidence intervals), we argue that creativity researchers must (a) explicitly define what they mean by creativity, (b) avoid using scores of creativity measures as the sole definition of creativity (e.g., creativity is what creativity tests measure and creativity tests measure creativity, therefore we will use a score on a creativity test as our outcome variable), (c) discuss how the definition they are using is similar to or different from other definitions, and (d) address the question of creativity for whom and in what context.

In explicitly defining creativity, we are not suggesting that researchers necessarily adopt our definition, just that they clearly define what they mean by creativity and (when appropriate) the empirical indicators of that definition. Furthermore, we admonish researchers to avoid the temptation of simply allowing the score obtained from a creativity measure to serve as the definition of what is creative in their study. A reviewer noted that, at some point, creativity tests were almost certainly based on a theoretical conception of creativity. We agree, but we question whether researchers using these tests have seriously considered the theoretical foundations of the measures. In many cases, the conceptualization of the instruments occurred decades earlier, before more complex systems theories were developed and refined. Without serious consideration of these issues, implicit and potentially outdated definitions of creativity are perpetuated. Therefore, the use of a creativity measure would benefit from an accompanying definition of creativity as well as an explanation of how the particular measure does (and does not) meet the definition of creativity being used. Also, when providing a definition of creativity (particularly if it is a novel definition), it is important to explain how this definition is or is not similar to

other definitions in the literature. In doing so, consumers of research will be in a better position to be aware of cumulative findings as well as determine whether contradictory findings are the result of comparing dissimilar lines of work or if other factors are accounting for those differential findings (e.g., methods, population). Finally, specifying the context and stakeholders is important in clarifying the parameters in which the definition and study results apply.

Unless researchers start to adopt these basic guidelines, the kinds of "research" and ideas put into the creativity knowledge base will continue to be insulated from empirical testing and thereby add to the bulk of speculative accounts of creativity that range from mysticism to pop psychology to promising scholarly efforts. Ironically, amidst such a wide range of varying and untouchable accounts of creativity, the potential for developing a cumulative, robust line of study becomes diminished with each successive contribution. Rather than being a strength of the field, as many believe, the lack of a common definition is a major, debilitating weakness.

Adhering to these guidelines, as well as further dialogue and effort on the part of researchers, is needed to strengthen and advance the knowledge base of creativity, one of psychology's most promising and provocative constructs. Serious efforts to study creativity have had a relatively short history, but we feel that an agreed-on definition is long overdue and has placed the field in a crisis of legitimacy. The study of creativity will only become a legitimate endeavor when researchers and practitioners clearly and specifically put forth an agreed-on operational definition of creativity. This change in the focus and direction of creativity research is needed if the field is to move from a shadowy past into the forefront of constructive approaches to educational psychology and the social sciences in general.

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APPENDIX
Creativity Usage Analysis (Classification Sheet)

Article ID_____   Name of Coder:_____

1. Journal Type: (Business, Education, Psychology, CRJ, JCB)
2. Number of times the term "Creativity" is used in the body of the article _____
3. Is creativity specifically defined: (YES/NO). If yes proceed to number 4.
   3a. If no, can a definition be inferred from the immediate contextual clues of the article (YES/NO). If yes, proceed to number 7.
4. After how many uses of the term is a definition offered _____

   (e.g., 5—creativity is used five times prior to the definition being offered)

Definition Factors

5. Actual definition offered (quote directly—including page number if available):

6. If the article provides an explicit definition, classify it using the following factors. Multiple factors can be selected.
   _____ **Unique**. The definition specifically mentions uniqueness. For example: that which is "new," "novel," "innovative," "outside of the box"
   _____ **Artistic**. Definition specifies an artistic focus (art, music, literature) highlighting artistic skill, production, proclivity.
   _____ **Psychometric**. The definition relies on the outcome of some creativity instrument (e.g., ideational fluency test, etc). That is, creativity is defined by some score on a creativity measurement instrument.
   _____ **Usefulness**. The definition specifies that creativity involves usefulness, value, or contribution.

   _____ **Stakeholder**. The definition specifies that creativity is defined by particular stakeholder groups (e.g., artists, community of scientists).
   _____ **Accessible**. The definition specifies that creativity is a trait possessed by anyone.
   _____ **Other**:

7. If the article provides an implicit definition, classify it using the following factors. Multiple factors can be selected.
   _____ **Unique**. The definition specifically mentions uniqueness. For example: that which is "new," "novel," "innovative," "outside of the box"
   _____ **Artistic**. Definition specifies an artistic focus (art, music, literature) highlighting artistic skill, production, proclivity.
   _____ **Psychometric**. The definition relies on the outcome of some creativity instrument (e.g., ideational fluency test, etc). That is, creativity is defined by some score on a creativity measurement instrument.
   _____ **Usefulness**. The definition specifies that creativity involves usefulness, value, or contribution.
   _____ **Stakeholder**. The definition specifies that creativity is defined by particular stakeholder groups (e.g., artists, community of scientists).
   _____ **Accessible**. The definition specifies that creativity is a trait possessed by anyone.
   _____ **Other**: